WHAT IS CLAIMED IS:

1. An apparatus for measuring breathability and comfort level of a shoe, comprising:

-- a rigid structure made of self-supporting heat-conducting material that duplicates a contour of a foot for supporting a shoe to be tested, said rigid structure being divided into at least three regions that are thermally insulated from each other;

-- heating means for heating autonomously each one of said at least three regions of said rigid structure to a presettable temperature;

-- at least one cladding for surrounding said rigid structure, which is made of a soft material whose structure is permeable to liquids and adapted of absorbing water and distributing the water over an entire surface of the rigid structure that it surrounds;

-- sensor means for sensing an external temperature of each region of said at least one cladding that correspond to said at least three regions;

-- supply means for metered supply of water to said rigid structure surrounded by said at least one cladding;

-- measuring means for determining a level of electric power dissipated and keeping constant the temperature of said regions.

2. The apparatus of claim 1, further comprising humidity sensing means for sensing relative humidity.

3. The apparatus of claim 1, wherein said rigid structure made of self-supporting material is made of aluminum.

4. The apparatus of claim 1, wherein said heating means are constituted by resistive elements that are powered electrically to provide adjustable temperature.

5. The apparatus of claim 4, comprising thermoregulators for adjusting temperature of said resistive elements.

6. The apparatus of claim 4, wherein said resistive elements are embedded in the self-supporting material that constitutes said rigid structure.

7. The apparatus of claim 1, wherein said sensor means are constituted by thermocouples that are fixed to said at least one cladding.

8. The apparatus of claim 1, wherein said at least one cladding is made of soft material that is capable of absorbing water in an amount equal to approximately 400% by weight and of distributing said water on the surface of the rigid structure.

9. The apparatus of claim 1, wherein said at least one cladding is made of a fabric.

10. The apparatus of claim 1, wherein said rigid structure is divided into five regions comprising toe, inner sole, outer sole, instep and heel regions.

11. The apparatus of claim 1, comprising silicone diaphragms for dividing said at least three regions.

12. The apparatus of claim 2, wherein said supply means for metered supply of water to said at least three regions of said rigid structure surrounded by said at least one cladding are constituted by a precision pump driven by an electronic control unit.

13. The apparatus of claim 12, wherein said precision pump is peristaltic.

14. The apparatus of claim 1, comprising: a supporting frame that is composed of a footing and a beam; a first actuator fixed on said beam for vertical reciprocating translational motion of said rigid structure; a second reciprocating translational motion actuator; and a carriage that supports a free roller, said carriage being horizontally slideable on said footing following the actuation thereof by said second motion actuator.

15. The apparatus of claim 14, further comprising a plate is slideable on a surface of said free roller for providing a sole resting region for the shoe to be tested during stroke of said carriage that supports said free roller, said plate being rigidly coupled to said frame and to said roller so as to vary inclination of the sole resting region from an inactive position, in which an end of said plate that is directed toward a heel of the shoe is higher than an opposite end thereof, to a substantially horizontal position of said plate, said

plate being provided with return means for returning of the plate to said inactive position that corresponds to a position step in which the shoe is fully raised.

16. The apparatus of claim 15, wherein said plate is rigidly coupled to said beam at the end thereof that is directed toward the heel of the shoe by way of said return means.

17. The apparatus of claim 16, wherein said return means comprise elastic elements.

18. The apparatus of claim 16, wherein said return means comprise hydraulic pistons.

19. The apparatus of claim 15, comprising at least one guide for controlled sliding of said plate, arranged on the surface of said free roller.

20. The apparatus of claim 14, further comprising a load cell that is interposed between said first reciprocating translational motion actuator and said rigid structure.

21. The apparatus of claim 14, further comprising speed control means for controlling speed and synchronization of said first and second reciprocating translational motion actuators.

22. The apparatus of claim 14, further comprising a first stroke limit sensor and a second stroke limit sensor for said carriage, which are arranged respectively at a front and at a rear position on said footing with respect to said rigid structure.

23. The apparatus of claim 14, wherein said first reciprocating translational motion actuator is constituted by a pneumatic cylinder provided with a stem.

24. The apparatus of claim 14, wherein said second reciprocating translational motion actuator is constituted by a stemless pneumatic cylinder.

25. The apparatus of claim 21, wherein said speed and synchronization control means comprise pressure control valves.

26. The apparatus of claim 22, further comprising a pneumatic valve that

regulates flow of air within said first and second reciprocating translational motion actuators and cooperates with said first and second stroke limit sensors.

27. The apparatus of claim 14, further comprising ventilation means for ventilation of said rigid structure.

28. The apparatus of claim 27, wherein said ventilation means are constituted by an electric fan.

29. The apparatus for constant-humidity tests of claim 12, wherein in testing configuration, the shoe to be tested is fitted on said rigid structure with said at least one cladding and with said relative humidity sensing means arranged thereon, the humidity sensing means sending a signal to said control unit, which drives said precision pump, with said pump being activated when humidity internal to said rigid structure drops below a set minimum value in order to send water to said rigid structure and return humidity about said minimum set value.